WHAT IS CLAIMED IS:

1. A method for providing greater reach of a DSL signal comprising:

receiving an incoming DSL signal including a data signal;

demodulating the data signal;

requantizing the demodulated data signal;

modulating the requantized data signal;

amplifying the modulated requantized data signal; and

transmitting the amplified signal.

2. The method of Claim 1, wherein the incoming DSL signal further includes a voice signal.

3. The method of Claim 1, wherein demodulating the data signal comprises:

converting the data signal from analog to digital form;

dividing, by a Fast Fourier Transformer, the data signal in digital form into a plurality of desired data bins specified by frequency; and

discarding data outside the plurality of desired data bins.

4. The method of Claim 1, wherein requantizing the data signal comprises determining a constellation associated with each bit of data in the modulated data signal and resetting the value of that bit to the value of the constellation.

5. The method of Claim 1, wherein modulating the requantized data signal comprises combining, by an inverse Fast Fourier Transformer, a plurality of requantized data in a plurality of data bins specified by frequency into a digital signal in the time domain and converting the digital signal in the time domain to an analog signal.

6. The method of Claim 1, wherein requantizing the demodulated data signal comprises requantizing the demodulated data signal in the frequency domain.

7. The method of Claim 2, wherein and further comprising combining the voice signal and the amplified data signal.

8. The method of Claim 2, wherein filtering the data signal comprises filtering the data signal into a first frequency range of approximately zero to four kilohertz and a second frequency range of between approximately 25 kilohertz to 272 kilohertz.

9. The method of Claim 1, wherein receiving the incoming DSL signal comprises receiving, by a resistive hybrid bridge, the incoming DSL signal.

10. The method of Claim 1, wherein transmitting the combined signal comprises transmitting, by the balanced bridge, the combined signal.

11. A method for providing greater reach of a DSL signal having a data portion, comprising:

demodulating the data portion;

requantizing the demodulated data portion;

modulating the requantized data portion;

amplifying the modulated requantized data portion; and

transmitting the amplified modulated requantized data portion.

12. The method of Claim 11, wherein demodulating the data portion comprises:

converting the data portion from analog to digital form;

dividing the data signal in digital form into a plurality of desired bins specified by frequency range; and

discarding data outside the plurality of desired bins.

13. The method of Claim 11, wherein requantizing the demodulated data portion comprises determining a constellation associated with each bit of data in the modulated data portion and resetting the value of that bit to the value of the constellation.

14. The method of Claim 11, wherein modulating the requantized data portion comprises combining a plurality of requanitized portions in a plurality of data bins specified by frequency into a digital signal in the time domain and converting the digital signal in the time domain to an analog signal.

15. The method of Claim 11, wherein requantizing the demodulated data portion comprises requantizing the demodulated data portion in the frequency domain.

16. A system for facilitating greater reach of a DSL signal having a data portion, comprising:

a means for demodulating the data portion;

a means for requantizing the demodulated data portion;

a means for modulating the requantized data portion; and

a means for amplifying the modulated requantized data portion.

17. The system of Claim 16, and further comprising a means for transmitting the amplified modulated requantized data portion.

18. A system for facilitating providing greater reach of a DSL signal comprising:

a means for splitting the DSL signal into separate voice and data signals;

a means for demodulating the data signal;

a means for requantizing the demodulated data signal;

a means for modulating the requantized data signal; and

a means for combining and amplifying the voice and data signals into a combined signal.

19. A bi-directional DSL repeater and amplifier comprising:

a first signal detector operable to receive a first incoming DSL signal including a first data signal and direct the first incoming DSL signal to a first conditioning circuit and also operable to receive a first outgoing data signal from a second conditioning circuit and direct the first outgoing data signal over a first telephone line;

the first conditioning circuit being operable to:

receive a signal indicative of the first incoming DSL signal;

demodulate, requantize, and remodulate the first data signal to produce a first remodulated data signal; and

amplify the first remodulated data signal to produce a second outgoing data signal;

the second conditioning circuit being operable to:

receive a signal indicative of a second incoming DSL signal including a second data signal;

demodulate, requantize, and remodulate the second data signal to produce a second remodulated data signal; and

amplify the second remodulated data signal to produce the first outgoing data signal;

and

a second signal detector operable to receive the second incoming DSL signal and direct the second incoming DSL signal to the second conditioning circuit and also operable to receive the second outgoing data signal from the first conditioning circuit and direct the second outgoing data signal over a second telephone line.

20. The bi-directional DSL repeater and amplifier of Claim 19 wherein the first conditioning circuit comprises a low band filter and a high band filter for filtering the incoming DSL signal into a voice and the first data signal.

21. The bi-directional DSL repeater and amplifier of Claim 19, wherein the first conditioning circuit comprises a requantizer for requantizing the first data signal.

22. The bi-directional DSL repeater and amplifier of Claim 19, wherein the first conditioning circuit comprises on analog-to-digital converter and a Fast Fourier Transformer for demodulating the first data signal.

23. The bi-directional DSL repeater and amplifier of Claim 19, wherein the first conditioning circuit comprises a digital-to-analog converter and an Inverse Fast Fourier Transformer for converting the first data signal into digital format.

24. The bi-directional DSL repeater and a amplifier of Claim 19, wherein the first conditioning circuit comprises a data acquirer and re-transmitter for demodulating, requantizing, and remodulating the first data signal.

25. The bi-directional DSL repeater and amplifier of Claim 20, wherein the first conditioning circuit comprises a first amplifier for amplifying the first voice signal and a second amplifier for amplifying the first remodulated data signal.

26. The bi-directional DSL repeater and amplifier of Claim 19, wherein the first signal detector comprises a resistive hybrid bridge.